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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Qualcomm Incorporated Patents Department 5775 Morehouse Drive San Diego, CA 92121-1714			RYMAN, DANIEL J	
			ART UNIT	PAPER NUMBER
			2665	

DATE MAILED: 07/12/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/843,553	ODENWALDER ET AL.	
	Examiner	Art Unit	
	Daniel J. Ryman	2665	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 June 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 April 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

1. Examiner maintains the objections to the specification. Either Applicant did not correct the informality or the correction made by Applicant resulted in an additional informality. The specifics of the objections to the specification follow.
2. Applicant's arguments filed 6/9/2005 have been fully considered but they are not persuasive. On pages 7-8 of the Response, Applicant asserts that all of the cited prior art fails to teach the single "preamble channel" of the claimed invention since the cited prior art teaches "conveying information in one channel carrying both preamble and core data." Examiner, respectfully, disagrees. The IEEE dictionary defines a "channel" as "a single path for transmitting electric signals, usually in distinction from other parallel paths" where "[t]he term 'path' is to be interpreted in a broad sense to include separation by frequency division or time division." Szczutkowski discloses that the preamble is distinct from the "successive data frames" that follow the preamble (Fig. 2 and col. 8, lines 51-63). As such, as broadly defined, the preamble of Szczutkowski is transmitted in a "channel" since the preamble is transmitted in a "time division" distinct from the "time divisions" used to transmit the frames. If Applicant wishes for the term "channel" to have a specific definition, then Applicant should amend the claims to include this specific definition.
3. Applicant further asserts, on page 8 of the Response, that the cited prior art does not disclose "time slots." Again, Examiner, respectfully, disagrees. As mentioned above, Szczutkowski discloses transmitting the preamble followed by successive frames. Thus, as can be seen in Fig. 2 of Szczutkowski, the transmission of Szczutkowski is divided in a time basis,

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which suggests the use of TDMA. Further, Kolze discloses using a variable length preamble in a TDMA system (col. 2, lines 32-35), where TDMA systems are divided into time slots. As such, as broadly defined, the cited prior art suggests transmitting the preamble in “time slots.” Again, if Applicant wishes for the term “time slot” to have a specific definition, then Applicant should amend the claims to include this specific definition.

4. Applicant further asserts, on page 8 of the Response, that Mahany fails to teach “preamble size detection.” In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). Szczutkowski teaches a preamble detection element (col. 5, lines 21-36), wherein the preamble detection element outputs a potential preamble sequence (col. 5, lines 21-36). Szczutkowski further suggests that the preamble sequences vary in length by teaching that the preamble is repeated to provide fade protection (col. 5, lines 27-36 and col. 5, lines 43-46), where increasing the number of repetitions provide greater fade protection at the expense of reduced bandwidth efficiency, i.e. greater overhead bandwidth. Kolze teaches in a preamble transmission system, using a variably sized preamble sequence (col. 4, lines 58-61) in order to adapt the preamble to varying channel conditions (col. 4, lines 23-43). Thus, the combination of Szczutkowski in view of Kolze suggests a preamble size detection element in order to correctly receive a preamble in a system where preamble size varies. As such, Mahany is not required to teach an element for “preamble size detection.” Rather, Mahany is used to disclose using a plurality of detection elements simultaneously in order to detect a preamble.

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5. Applicant additionally asserts, on page 8 of the Response, that the cited prior art fails to disclose “a selection element for choosing a true preamble sequence.” Again, Examiner, respectfully, disagrees. The cited prior art teaches that the size of each preamble sequence varies such that a detection element would have to search through multiple sized preambles in order to determine which size of preamble sequence is being used. If such a feature were not present, the detection element would not be able to determine when the preamble sequence had been entirely received. Mahany teaches using multiple detectors simultaneously in order to quickly search for a particular type of preamble sequence (col. 9, lines 48-54). Mahany also suggests that a selection element chooses a true preamble sequence from the potential preamble sequences based on signaling from the preamble detectors (col. 2, lines 30-35; col. 9, lines 48-54; and col. 11, lines 54-59). When multiple detection units are utilized, a selection element is required to choose which one of the detection units correctly detects the signal. Otherwise, the system will never know which of the multiple detection units is outputting the correct signal. Therefore, Examiner maintains that the cited prior art teaches “a selection element for choosing a true preamble sequence.”

6. On page 9, Applicant traverses Examiner’s official notice regarding soft-combining. In response, Examiner submits Chennakeshu et al. (USPN 6,046,990) which discloses that soft-combining is a well-known method for decoding repetitions of signals. Chennakeshu also discloses that soft-combining is equivalent to majority voting, which is used by Szczutkowski (col. 6, lines 13-24). Thus, Examiner maintains that it would have been obvious to one of ordinary skill in the art at the time of the invention to use soft-combining since it is well known in the art.

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7. For the above reasons, Examiner maintains that claims 1-15 are obvious given the cited prior art.

Specification

8. The disclosure is objected to because of the following informalities: on page 4, line 4 “switch 24” should be “switch 18” to match Fig. 1; on page 4, line 7 “network 18” should be “network 24” to match Fig. 1; and in line 2 of paragraph 1045, “310a” should be “330a”.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 1, 7-9, and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Szczutkowski et al. (USPN 4,757,536) in view of Kolze et al. (USPN 6,285,681) in view of Mahany (USPN 6,018,555).

11. Regarding claim 1, Szczutkowski discloses an apparatus in a remote station for decoding a preamble channel (col. 5, lines 21-36), comprising: a preamble detection element (col. 5, lines 21-36), wherein the preamble detection element outputs a potential preamble sequence (col. 5, lines 21-36).

Szczutkowski does not expressly disclose that the preamble channel carries variably sized preamble sequences and that the preamble detection element is a preamble size detection element for determining a number of slots occupied by a preamble sequence on the preamble channel.

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However, Szczutkowski does disclose that the transmission system is prone to varying channel conditions (fading) (col. 5, lines 21-36). Kolze teaches in a preamble transmission system, using a variably sized preamble sequence (col. 4, lines 58-61) in order to adapt the preamble to varying channel conditions (col. 4, lines 23-43). Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to have the preamble channel carry variably sized preamble sequences and to have the preamble detection element be a preamble size detection element for determining a number of slots occupied by a preamble sequence on the preamble channel in order to adapt the preamble to varying channel conditions.

Szczutkowski in view of Kolze does not expressly disclose that there are a plurality of preamble size detection elements, wherein each of the plurality of preamble size detection elements outputs a best path metric and that there is a selection element for choosing a true preamble sequence from the potential preamble sequences output from the plurality of detection elements. Mahany teaches, in a system for preamble detection, using multiple parallel detectors in order to quickly detect a particular type of preamble sequence (col. 9, lines 48-54). Mahany also suggests that a selection element chooses a true preamble sequence from the potential preamble sequences based on signaling from the preamble detectors (col. 2, lines 30-35; col. 9, lines 48-54; and col. 11, lines 54-59). Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to have a plurality of preamble size detection elements, wherein each of the plurality of preamble size detection elements outputs a best path metric and to have a selection element for choosing a true preamble sequence from the potential preamble sequences output from the plurality of detection elements in order to quickly detect a particular type of preamble sequence.

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12. Regarding claim 7, Szczutkowski in view of Kolze in further view of Mahany suggests that the selection element is further for determining the number of slots occupied by a data subpacket on a non-preamble channel, wherein the number of slots occupied by the data subpacket is associated with the number of slots occupied by the true preamble sequence (Kolze: col. 4, lines 44-57) where the length of the preamble is determined using the length of the non-preamble channel.

13. Regarding claim 8, Szczutkowski in view of Kolze in further view of Mahany suggests that the selection element is further for determining the number of slots occupied by a data subpacket on a non-preamble channel, wherein the number of slots occupied by the data subpacket is carried by the true preamble sequence (Kolze: col. 4, lines 44-57) where “carried by the true preamble” can be broadly interpreted to include determining the number of slots based off of the length of the preamble.

14. Regarding claims 9 and 14, Szczutkowski discloses a method for and apparatus for determining the preamble information transmitted on a preamble channel, the method comprising the steps of and the apparatus comprising means for: de-interleaving a preamble channel to form a de-interleaved sequence (col. 7, lines 14-28); combining the de-interleaved sequence (col. 6, lines 14-29); decoding the de-interleaved sequence to generate a potential preamble (col. 5, lines 21-36).

Szczutkowski does not expressly disclose that the combining comprises soft-combining; however, Examiner takes official notice that soft-combining is well known in the art. It would have been obvious to one of ordinary skill in the art at the time of the invention to use soft-combining since soft-combining is well known in the art.

Szczutkowski also does not expressly disclose that the preamble channel carries variably sized preamble sequences and that the preamble detection element is a preamble size detection element for determining a number of slots occupied by a preamble sequence on the preamble channel. However, Szczutkowski does disclose that the transmission system is prone to varying channel conditions (fading) (col. 5, lines 21-36). Kolze teaches in a preamble transmission system, using a variably sized preamble sequence (col. 4, lines 58-61) in order to adapt the preamble to varying channel conditions (col. 4, lines 23-43). Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to have the preamble channel carry variably sized preamble sequences and to have the preamble detection element be a preamble size detection element for determining a number of slots occupied by a preamble sequence on the preamble channel in order to adapt the preamble to varying channel conditions.

Szczutkowski in view of Kolze does not expressly disclose that there are a plurality of preamble size detection elements, wherein each of the plurality of preamble size detection elements outputs a best path metric and that there is a selection element for choosing a true preamble sequence from the potential preamble sequences output from the plurality of detection elements. Mahany teaches, in a system for preamble detection, using multiple parallel detectors in order to quickly detect a particular type of preamble sequence (col. 9, lines 48-54). Mahany also suggests that a selection element chooses a true preamble sequence from the potential preamble sequences based on signaling from the preamble detectors (col. 2, lines 30-35; col. 9, lines 48-54; and col. 11, lines 54-59). Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to have a plurality of preamble size detection elements, wherein each of the plurality of preamble size detection elements outputs a best path metric and

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to have a selection element for choosing a true preamble sequence from the potential preamble sequences output from the plurality of detection elements in order to quickly detect a particular type of preamble sequence.

15. Claims 2-6, 10-13, and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Szczutkowski et al. (USPN 4,757,536) in view of Kolze et al. (USPN 6,285,681) in view of Mahany (USPN 6,018,555) in further view of Applicant's Admitted Prior Art.

16. Regarding claim 2, Szczutkowski in view of Kolze in further view of Mahany suggests that each of the plurality of detection elements comprises: a de-interleaver for operating over a predetermined number of slots of the preamble channel (Szczutkowski: col. 7, lines 14-28), wherein each de-interleaver of the plurality of detection elements operates over a different predetermined number of slots (Szczutkowski: col. 7, lines 14-28 and Kolze: col. 4, lines 58-61); a decoder for extracting preamble information from the preamble sequence (Szczutkowski: col. 5, lines 21-36).

Szczutkowski in view of Kolze in further view of Mahany does not expressly disclose a sequence checker for determining if an identifier is present in the preamble information; however, Szczutkowski in view of Kolze in further view of Mahany does disclose including identifiers in the information stream (Kolze: col. 3, lines 53-59). Applicant teaches as prior art including a variety of fields in a preamble including identifiers (para. 1004). Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to include a sequence checker for determining if an identifier is present in the preamble information since it is well known to include identifiers in preamble sequences.

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17. Regarding claim 3, Szczutkowski in view of Kolze in further view of Mahany in further view of Applicant suggests that at least one of the plurality of detection elements further comprises a combining element operating over at least two slots, wherein the at least one of the plurality of detection elements operates over the at least two slots (Szczutkowski: col. 6, lines 13-29).

18. Regarding claim 4, Szczutkowski in view of Kolze in further view of Mahany in further view of Applicant does not expressly disclose that the decoder is a convolutional decoder; however, Szczutkowski in view of Kolze in further view of Mahany in further view of Applicant discloses a decoder (Szczutkowski: col. 5, lines 21-36; Mahany: col. 9, lines 51-54 and col. 10, lines 41-46; and Applicant: para. 1004). Examiner takes official notice that convolutional decoders are well known in the art. Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to use a convolutional decoder since such decoders are well known in the art.

19. Regarding claim 5, Szczutkowski in view of Kolze in further view of Mahany in further view of Applicant suggests that the identifier is a Medium Access Control (MAC) identifier (Kolze: col. 3, lines 53-59 and Applicant: para. 1004).

20. Regarding claim 6, Szczutkowski in view of Kolze in further view of Mahany in further view of Applicant suggests that each decoder in the plurality of detection elements outputs a best path metric value and the potential preamble sequence (Mahany: col. 2, lines 30-35; col. 9, lines 48-54; and col. 11, lines 54-59).

21. Regarding claim 10, Szczutkowski in view of Kolze in further view of Mahany does not expressly disclose that choosing between the first potential preamble and the second potential

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preamble comprises: checking for an identifier in the first potential preamble and in the second potential preamble; and selecting either the first potential preamble or the second potential preamble in accordance with the presence of the identifier. Applicant teaches as prior art including a variety of fields in a preamble including identifiers (para. 1004). It is implicit that the device will should only act on information that is destined for the device. Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention that choosing between the first potential preamble and the second potential preamble comprises: checking for an identifier in the first potential preamble and in the second potential preamble; and selecting either the first potential preamble or the second potential preamble in accordance with the presence of the identifier in order to ensure that the device only acts on information destined for the device.

22. Regarding claim 11, Szczutkowski in view of Kolze in further view of Mahany in further view of Applicant suggests that selecting either the first potential preamble or the second potential preamble comprises selecting either the first potential preamble or the second potential preamble in accordance with the better of the first metric value or the second metric value if the identifier is present in both the first potential preamble and the second potential preamble (Mahany: col. 2, lines 30-35; col. 9, lines 48-54; and col. 11, lines 54-59).

23. Regarding claim 12, Szczutkowski in view of Kolze in further view of Mahany in further view of Applicant suggests that selecting either the first potential preamble or the second potential preamble comprises selecting either the first potential preamble or the second potential preamble in accordance with the better of the first metric value or the second metric value if the identifier is not present in the first potential preamble or in the second potential preamble (Mahany: col. 2, lines 30-35; col. 9, lines 48-54; and col. 11, lines 54-59).

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24. Regarding claims 13 and 15, Szczutkowski discloses a method for and apparatus for determining the preamble information carried by a preamble channel, the method comprising the steps of and the apparatus comprising means for: de-interleaving for obtaining de-interleaving results (col. 7, lines 14-28); combining symbols within the de-interleaving results (col. 6, lines 14-29); decoding the de-interleaved symbols (col. 5, lines 21-36).

Szczutkowski does not expressly disclose that the combining comprises soft-combining; however, Examiner takes official notice that soft-combining is well known in the art. It is also implicit that if there is only one preamble code rather than multiple preamble codes, then no combining will occur. It would have been obvious to one of ordinary skill in the art at the time of the invention to use soft-combining since soft-combining is well known in the art.

Szczutkowski also does not expressly disclose that the preamble channel carries variably sized preamble sequences and that the preamble detection element is a preamble size detection element for determining a number of slots occupied by a preamble sequence on the preamble channel. However, Szczutkowski does disclose that the transmission system is prone to varying channel conditions (fading) (col. 5, lines 21-36). Kolze teaches in a preamble transmission system, using a variably sized preamble sequence (col. 4, lines 58-61) in order to adapt the preamble to varying channel conditions (col. 4, lines 23-43). Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to have the preamble channel carry variably sized preamble sequences and to have the preamble detection element be a preamble size detection element for determining a number of slots occupied by a preamble sequence on the preamble channel in order to adapt the preamble to varying channel conditions.

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Szczutkowski in view of Kolze does not expressly disclose that there are a plurality of preamble size detection elements. Mahany teaches, in a system for preamble detection, using multiple parallel detectors in order to quickly detect a particular type of preamble sequence (col. 9, lines 48-54). Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to have a plurality of preamble size detection elements in order to quickly detect a particular type of preamble sequence.

Szczutkowski in view of Kolze in further view of Mahany does not expressly disclose checking the decoded symbols for an identifier and extracting the preamble information from the checked symbol that carries the identifier. Applicant teaches as prior art including a variety of fields in a preamble including identifiers (para. 1004). It is implicit that the device will should only act on information that is destined for the device. Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to check the decoded symbols for an identifier and to extract the preamble information from the checked symbol that carries the identifier in order to ensure that the device only acts on information destined for the device.

Conclusion

25. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

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CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daniel J. Ryman whose telephone number is (571)272-3152. The examiner can normally be reached on Mon.-Fri. 7:00-4:30 with every other Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Huy Vu can be reached on (571)272-3155. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

DJR Daniel J. Ryman
Examiner
Art Unit 2665



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